

HAER  
IOWA  
56-DEN.V,  
1-

HAER No. IA-61

BRIDGEPORT BRIDGE  
Iowa Bridges Recording Project  
Spanning Skunk River  
Denmark Vicinity  
Lee County  
Iowa

BLACK & WHITE PHOTOGRAPHS  
XEROGRAPHIC COPIES OF COLOR TRANSPARENCIES  
WRITTEN HISTORICAL & DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD  
National Park Service  
Department of the Interior  
P.O. Box 37127  
Washington, D.C. 20013-7127

HISTORIC AMERICAN ENGINEERING RECORD

HAER  
IOWA  
56-DEN.V,  
1-

BRIDGEPORT BRIDGE

HAER No. IA-61

Location: Spanning the Skunk River on a county road; 3.5 miles northwest of Denmark, Lee County, Iowa  
UTM: 15.638030.4516560  
USGS: Danville, Iowa quadrangle (7.5 minute series, 1981)

Date of Construction: 1904 - Main span  
Unknown - Secondary span

Designer/Builder: Clinton Bridge and Iron Works, Clinton, Iowa [Main span]  
Unknown [Secondary span]

Fabricator: Carnegie Steel Company, Pittsburgh, Pennsylvania

Significance: The main span of this bridge may be the longest pinned truss remaining in Iowa and serves as a well-preserved example of a Pratt truss subtype - the Pennsylvania truss. The bridge is significant for its role in the development of regional transportation in the Lee and Des Moines county area.

Historian: Robert W. Jackson, August 1995

Project Information: This document was prepared as part of the Iowa Historic Bridges Recording Project performed during the summer of 1995 by the Historic American Engineering Record (HAER). The project was sponsored by the Iowa Department of Transportation (IDOT). Preliminary research on this bridge was performed by Clayton Fraser of Fraserdesign, Loveland, CO.

The Bridgeport Bridge, a two-truss structure spanning the Skunk River between Lee and Des Moines counties approximately three and one-half miles northwest of Denmark, Iowa, has been closed to traffic since 1984. In that year a new concrete and steel bridge was opened approximately 500 feet upstream to meet the continuing need of regional traffic which had long depended on the Bridgeport Bridge, one of three bridges connecting the two counties along the eighteen mile river border. The other two bridges are both on primary roads; Highway 394 crosses the river five and one-half miles downstream, and Highway 61 crosses the river about nine miles downstream. Although the new bridge provided continued service at the approximate location of the older crossing, its creation brought to an end the utilization of a Pennsylvania pinned truss that may be the longest of its kind remaining in Iowa.

The story of the Bridgeport Bridge actually begins long before the bridge was constructed. In 1836, Jason Wilson came to Lee County Iowa, and about two years later he built a dam and grist mill at Oakland on the Skunk River with his brother Robert. It was the third dam and mill in the county, and operated profitably for many years. Due to the success of these mills, additional dams were soon built about every four miles on the river from Augusta to Brighton, including the mill at Bridgeport owned by the Gibson family. At some locations, such as Augusta and Lowell, mills were built at each end of the dam so that settlers bringing their corn or wheat to either side of the river would not have to cross the swiftly flowing stream. The Wilson brothers subsequently acquired the Bridgeport mill from the Gibson family. This mill was located on the south side of the river, approximately three and one-half miles north-northwest of the town of Denmark.

After the development of large regional, steam-powered milling centers put many local water-powered mills out of business, the Bridgeport Mill was turned into a lumber and planing mill which also produced furniture, churns, butter bowls, tubs, and other articles made from native hardwood cut from the nearby hillsides. The activity of this business, as well as the needs of local farmers in both Lee and Des Moines counties, eventually required the construction a bridge over the Skunk River at Bridgeport.<sup>1</sup> In 1868 a three-span iron bridge, composed of two 120' bowstring

---

<sup>1</sup>Daily Democrat (Fort Madison, Iowa), 1955-1967, "Madisonia" clippings contained in the "Skunk River" vertical file at the Cattermore Memorial Library, Fort Madison, Iowa; History of Lee County, Iowa (Chicago: Western Historical Co., 1879), 877.

arches and a third span of unknown length and type, was constructed immediately adjacent to the Wilson dam and mill.<sup>2</sup>

The design of this bridge called for the erection of a central pier located in the approximate middle of the stream. The swiftly flowing waters of the Skunk River posed a challenge for the designers of the substructure as the center pier was susceptible to damage from ice flows and debris. After numerous repairs to the substructure of the bridge, the boards of supervisors of both Lee and Des Moines counties met in July of 1903 to once again consider contracting for the repair or rebuilding of the center pier of the bridge. Specifications were drawn up for the work to be performed, but after further deliberation it was decided in the fall of 1903 to replace the two river spans with a longer span, and thus eliminate the center pier altogether. It seems clear there was no need to replace the existing spans due to any weakness or structural deficiency of the superstructure. The problems with the bridge related only to the placement and condition of the center pier.<sup>3</sup>

On December 22, 1903, supervisors from Lee and Des Moines counties, meeting in joint session in Burlington, opened bids to construct a steel bridge to replace the iron bowstring spans. The Clinton Bridge and Iron Works from Clinton, Iowa bid the lowest at \$5,110. However, for reasons unknown, this bid was subsequently reconsidered at a joint supervisor's meeting in Fort Madison on January 13, 1904. At that time the boards considered two different strain sheets of the Clinton Bridge and Iron Works proposal, and taking the cost of the two different designs into consideration, determined the design shown on strain sheet No. 1, which included steel floor joists, to be the best design for the price. Therefore, the Clinton company's proposal for that design was accepted.<sup>4</sup>

---

<sup>2</sup>"Bridge Record, Lee County: Denmark Township," May 1894, a document contained in the files of the Lee County Auditor's Office, Fort Madison, Iowa.

<sup>3</sup>Proceedings of the Des Moines County Board of Supervisors, Book 5, 147 (15 September 1899), 399 (17 September 1903), Lee County Engineer's Office, Fort Madison, Iowa; "Specifications of Labor and Materials for the Execution of a Pier under Bridge at Bridgeport, Iowa," 1904, a document contained in the files of the Lee County Engineer's Office, Fort Madison, Iowa.

<sup>4</sup>Proceedings of the Des Moines County Board of Supervisors, Book 5, 421 (22 December 1903), 441 (13 January 1904); Lee County Supervisors' Journal 7, 246-248 (13 January 1904), Lee County Clerk's Office, Burlington, Iowa.

The Clinton Bridge and Iron Works won a considerable number of other bridge contracts around this same period in Lee, Des Moines and Henry counties, and was a very active bridge builder throughout Iowa and neighboring states. The company was first organized in March 1, 1875 as the Clinton Bridge Company, with a working capital of \$25,000. The original officers were Artemus Lamb, president; J.J. Swigert, vice-president; E.S. Hart, secretary, treasurer and assistant engineer, and J.S. Jenkins, chief engineer. The company reorganized in 1877, thus greatly increasing its capacity, and by 1879 had "erected 267 structures of all kinds and combinations of wood and iron trusses and arches".

The company merged with the Union Iron Works around 1882 and was taken over by Thomas Reeve. John Ward, a skilled shop man, was an associate of Reeve at that time. In 1885, C.C. Keepers joined the firm, which was briefly known as Reeve, Ward & Keepers. Mr. Keepers bought out his two partners, and sold the business to George E. Wilson of Sterling, Illinois in 1892. Wilson moved his family to Clinton to take over the company, which he renamed the Clinton Bridge and Iron Works. Wilson served as president and treasurer, and one of his two sons, George E. Wilson, Jr., was made secretary. By 1901, the company employed from 300 to 350 men, and was building bridges as far west as the Pacific coast and as far south as Louisiana and Texas. The company specialized in Pratt and Warren trusses, and there are a number of surviving bridges of these types in southeastern Iowa which the company erected in the early 1900s.<sup>5</sup>

The contract for a new bridge over the Skunk River signed on January 13, 1904 called for one span of 240' with a 16' roadway, including nine lines of 7" steel (floor) joists, removal of the old spans per specifications, and repair of the existing stone abutments at cost plus ten percent. The contract also stipulated that the bridge company could "have free use of the old structures for putting up of trestle work and other purposes as may be for the convenience of the said first party [the bridge company] in erecting the said work." The contract price was \$6,300, with each county paying one-half. The bridge was to be

---

<sup>5</sup>Biographical Record of Clinton County, Iowa (Chicago: S.J. Clarke Publishing Co., 1901), 136-139; Anne A. Bowbeer, ed., Clinton County Historical Society, History of Clinton County, Iowa (Clinton, Iowa: Clinton County Historical Society, 1976), 127; Western Historical Co., History of Clinton County, Iowa (Chicago: Western Historical Co., 1879), 523; Estelle Le Provost Youle, History of Clinton County, Iowa (Clinton, IA: Privately printed, 1946), 116; P.B. Wolf, ed., Wolf's History of Clinton County, Iowa (Indianapolis, IL: B.F. Bowen & Co., 1911), 1:372.

ready for public travel no later than July 1, 1904.<sup>6</sup> On November 16, 1904, the Des Moines County board of supervisors adjourned to meet at Bridgeport "to receive the new iron bridge just completed over the Skunk River," and accepted the bridge on the following day.<sup>7</sup>

It may seem that due to some design similarities between the extant smaller span and the river span that both were erected at the same time by the Clinton Bridge and Iron Works. However, a December 3, 1903 profile of the old bridge at Bridgeport prepared by M.E. Bannon, superintendent of bridges for Lee County, exists showing only the two bowstring spans in their entirety and simply illustrates a small portion of the smaller truss. Bannon marked this document as "Profile of bridge and river bottom Crossing Skunk River at Bridgeport Lee Co. Iowa. Old bridge to be taken down and replaced with a bridge of one span." This document clearly indicates that the "old bridge to be taken down" consisted of the two bowstring arches, which would be replaced with a single span that would be of approximately the same length - 240'. This document, therefore, supports the evidence of the two sets of minutes (one by the Lee County clerk and one by the Des Moines County clerk) and the signed contract in suggesting that it was never intended for the bridge company to replace the smaller span, and that it did not do so.<sup>8</sup>

The bridge company removed the two bowstring spans and most of the center pier of the old bridge, leaving approximately three feet of stone above low water. The northern pier was retained, and the existing iron truss may also have been retained. There is no evidence of it having been removed. A new twelve panel, pin-connected Pennsylvania through truss with nine line steel floor joists, was built over the river. This span is 240'-0" in length and has a roadway width of 16'-0". The panels are 20'-0", and the railing is 24" lattice. The flooring was originally 3" oak, and the wheel guards were originally 4" x 6" pine. This span was designed for a moving load of 1,600 lbs. per lineal

---

<sup>6</sup>"Clinton Bridge & Iron Works, Clinton, Iowa. Contract With Lee and Des Moines Counties, Iowa," 13 July 1904, a document contained in the files of the Lee County Auditor's Office, Fort Madison, Iowa.

<sup>7</sup>Proceedings of the Des Moines County Board of Supervisors, Book 5, 486-487 (16 November 1904).

<sup>8</sup>M.E. Bannon, "Profile of bridge and river bottom crossing Skunk River at Bridgeport, Lee Co., Iowa." November, 1903. A Document Contained in the Lee County Engineer's Office, Fort Madison, Iowa.

foot, a static load of 760 lbs. per lineal foot, and had a floor capacity of 100 lbs. per square foot.<sup>9</sup>

Despite the evidence of the minutes from the joint board of supervisors meetings, it would seem logical that the two counties purchased a steel bridge instead of an iron bridge. The Clinton Bridge and Iron Works, despite their name, had generally quit building iron bridges by 1904. Therefore, it is assumed that the Pennsylvania truss was made of steel.

The secondary span is a 54'-0" four panel pin-connected Pratt pony truss. Each panel is 13'-6". The designer, builder, and date of erection of this truss is unknown. It is presumed that it is not the original span that was erected in 1868, simply because it does not appear to be that old.

In 1914 damage to the substructure of the Bridgeport Bridge required repair, and at this time the two boards of supervisors signed a new agreement for joint maintenance of bridges between the counties.<sup>10</sup> The repairs made at this time apparently lasted until 1932, when it became apparent that the old north pier was beyond further repair. This pier, which was sixty-four years old, was built on a timber crib. At the time it was built it was protected by the old mill dam, which held the low water level several feet higher than its level in 1932. In addition, the Skunk River, at times, carried less water in 1932 than it had when the first bridge was built in 1868 due to the more even run-off from a more heavily forested watershed. As a consequence, the water level was lower in 1932 than the timber crib, which had begun to rot. Therefore, the pier settled slightly, endangering

---

<sup>9</sup>Data concerning the design of the bridge has been compiled from the following sources: "Iowa Department of Transportation, Structure Inventory and Appraisal Sheet, Structure Number 219350," 13 September 1993, a document contained in the files of the Lee County Engineer's Office, Fort Madison, IA; Clinton Bridge & Iron Works, copy of bridge elevation and profile, with statistics, Reference 104, Contract 735, a document contained in the files of the Lee County Engineer's Office, Fort Madison, IA; Clayton B. Fraser, "Iowa Historic Bridge Inventory," (Loveland, CO.: Fraserdesign, 1994), a report prepared for the Iowa Department of Transportation, on file at the offices of the Iowa Department of Transportation, Ames, Iowa.

<sup>10</sup>"Agreement Between Lee and Des Moines Counties in Regard to Maintenance of Skunk River Bridges on County Line," 15 October 1914, a document contained in the files of the Lee County Engineer's Office, Fort Madison, IA.

the integrity and safety of the bridge.<sup>11</sup> In response to this situation, the Iowa Highway Commission (IHC) designed two possible solutions to the pier problem, both of which were identified as design No. 233.

In April of 1933 the Lee County engineer's office received bids for reconstruction of the north pier with two design options available to be bid on, according to the specifications of IHC design No. 233. One option called for an all concrete pier with reinforcing steel, and the other called for a "steel tubular" pier.<sup>12</sup> The six bids submitted exhibited a considerable range in price; from \$13,892 to \$4,550 for the concrete pier option, and from \$12,350 to \$4,444 for the steel pier option. The Des Moines Asphalt Company won the contract for an all concrete pier with a low bid of \$4,550.<sup>13</sup>

By 1933 the Clinton Bridge Works had dropped the word "Iron" from the company name, but they were still in business. George E. Wilson, president of the company, sent a letter to the Lee County engineer dated May 3, 1933 stating that his firm's bid of \$7,640 was calculated to cover cost and had no profit in it. They only made the bid, according to Wilson, because they had nothing to do. Commenting on the successful bidder, Wilson remarked that "either we are crazy, or the other fellow is crazy".<sup>14</sup> Wilson was known as a shrewd businessman, and the company had prospered

---

<sup>11</sup>Letter from J.R. Daugherty, Lee County Engineer, to E.W. Blumenschein, Bridge Engineer, Iowa State Highway Commission, Ames, Iowa, 26 December 1932, a document contained in the files of the Lee County Engineer's Office, Fort Madison, Iowa.

<sup>12</sup> "Joint Bridge Letting: Lee and Des Moines Counties," 26 April 1933, a document contained in the files of the Lee County Engineer's Office, Fort Madison, Iowa.

<sup>13</sup>There are a variety of documents in the Lee County Engineer's Office that verify the details of the bidding process and subsequent contract, although a copy of the contract has not been located. The wide range in bid figures, and the identity of the companies involved in the bidding process, indicate that by 1933 the Clinton Bridge Works was facing stiff competition in an area where it had once been dominant. Many smaller firms that had not previously done a great deal of bridge building in southeastern Iowa were apparently undercutting the bids of the Clinton company.

<sup>14</sup>Letter from G.E. Wilson, president of Clinton Bridge Works, Clinton, Iowa, to M.F. McFarland, Lee County Engineer, Fort Madison, Iowa, 3 May 1933, a document contained in the files of the Lee County Engineer's Office, Fort Madison, Iowa.



since he acquired it in 1892. However, of the six bids submitted, three were lower than that of the Clinton Bridge Works, and the work was successfully done for close to the contract price by the Des Moines Asphalt Company. Due to extra piling ordered by the Lee County engineer, the final cost of the repairs amounted to \$4,621. Each county paid its half of the cost in August, 1933.

The reconstruction performed in 1933 stabilized the substructure, although periodic dumping of quarry rock was required around the abutments. By 1975, inspection reports began to note that the bridge was showing its age and was basically at the end of its service life. Nonetheless, the bridge continued in use until a new concrete bridge, located less than one quarter mile upstream, was built in 1984. At that time the Lee County Engineer's Office welded an I-beam across the southern inclined end post of the river span, and did the same to the northern inclined end post of the smaller span. Thus, approximately one hundred and sixteen years of combined service of a bridge at this location came to a close.

APPENDIX  
IMPLICATIONS FOR FURTHER RESEARCH

Several questions concerning the Bridgeport Bridge arose during the research and writing of this report. Some of these questions, due to limitations in the scope of the Iowa Historic Bridges Recording Project, have remained unanswered. It is suggested that scholars interested in this bridge consider pursuing the following:

1. Who built the Pratt truss, and when did they build it?
2. Did the Clinton Bridge and Iron Works engage in any sort of bid rigging to win the initial contract?
3. Why were the bids submitted for the substructure work performed in 1933 so far apart?

SOURCES CONSULTED

"Agreement Between Lee and Des Moines Counties in Regard to Maintenance of Skunk River Bridges on the County Line." 15 October 1914. A document contained in the files of the Lee County Engineer's Office, Fort Madison, Iowa.

Bannon, M.E. "Profile of bridge and river crossing Skunk River at Bridgeport, Lee County, Iowa." November 1903. A document contained in the files of the Lee County Engineer's Office, Fort Madison, Iowa.

Biographical Record of Clinton County, Iowa. Chicago: S.J. Clarke Publishing Co., 1901.

Bowbeer, Anne A. ed. History of Clinton County, Iowa. Clinton, IA: Clinton County Historical Society, 1976.

"Bridge Record, Lee County: Denmark Township." May 1894. A document contained in the files of the Lee County Auditor's Office, Fort Madison, Iowa.

"Clinton Bridge & Iron Works, Clinton, Iowa. Contract With Lee and Des Moines Counties, Iowa." 13 July 1904. A document contained in the files of the Lee County Auditor's Office, Fort Madison, Iowa.

Clinton County Historical Society. History of Clinton County, Iowa. Clinton, IA: Clinton County Historical Society, 1976.

Daily Democrat (Fort Madison, Iowa). 1955-1967. "Madisonia" clippings from the "Skunk River" vertical file at Cattermore Memorial Library, Fort Madison, Iowa.

Daugherty, J.R., Lee County Engineer, Fort Madison, Iowa to E.W. Blumenschein, Bridge Engineer, Iowa State Highway Commission, Ames, Iowa, 26 December 1932. A document contained in the files of the Lee County Engineer's Office, Fort Madison, Iowa.

Fraser, Clayton B. "Iowa Historic Bridge Inventory." Loveland, CO: Fraserdesign, 1994. A report prepared for the Iowa Department of Transportation on file at the Iowa Department of Transportation, Ames, Iowa.

"Iowa Department of Transportation Structure Inventory and Appraisal Sheet, Structure Number 219350." 13 September 1993. A document contained in the files of the Lee County Engineer's Office, Fort Madison, Iowa.

"Joint Bridge Letting: Lee and Des Moines Counties." 26 April 1933. A document contained in the files of the Lee County Engineer's Office, Fort Madison, Iowa.

Lee County Supervisors' Journal 7. 1904. A document contained in the files of the Lee County Auditor's Office, Fort Madison, Iowa.

Proceedings of the Des Moines County Board of Supervisors, Book 5. 1903-1904. A document contained in the files of the Des Moines County Clerk, Burlington, Iowa.

Le Provost Youle, Estelle. History of Clinton County, Iowa. Clinton, IA: Privately printed, 1946.

"Specifications of Labor and Materials for the Execution of a Pier under Bridge at Bridgeport, Iowa." 1904. A document contained in the files of the Lee County Engineer's Office, Fort Madison, Iowa.

Western Historical Co. History of Clinton County, Iowa. Clinton, IA: Western Historical Co., 1879.

Wilson, G.E., president, Clinton Bridge Works, Clinton, Iowa, to M.F. McFarland, Lee County Engineer, Fort Madison, Iowa, 3 May 1933. A document contained in the files of the Lee County Engineer's Office, Fort Madison, Iowa.

Wolf, P.B., ed. Wolf's History of Clinton County, Iowa. Indianapolis, IL: B.F. Bowen & Co., 1911.

ADDENDUM TO  
BRIDGEPORT BRIDGE  
Iowa Historic Bridges Recording Project  
Spanning Skunk River  
Denmark vic.  
Lee County  
Iowa

HAER No. IA-61

HAER  
IOWA  
56-DEN.V,  
1-

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD  
National Park Service  
1849 C Street, NW  
Washington, DC 20240

HISTORIC AMERICAN ENGINEERING RECORD  
BRIDGEPORT BRIDGE

HAER  
IOWA  
56-DEN.V,  
1-

This appendix is an addendum to a 11-page report previously transmitted to the Library of Congress.

**APPENDIX: ADDITIONAL REFERENCES**

Interested readers may consult the Historical Overview of Iowa Bridges, HAER No. IA-88: "This historical overview of bridges in Iowa was prepared as part of Iowa Historic Bridges Recording Project - I and II, conducted during the summers of 1995 and 1996 by the Historic American Engineering Record (HAER). The purpose of the overview was to provide a unified historical context for the bridges involved in the recording projects."